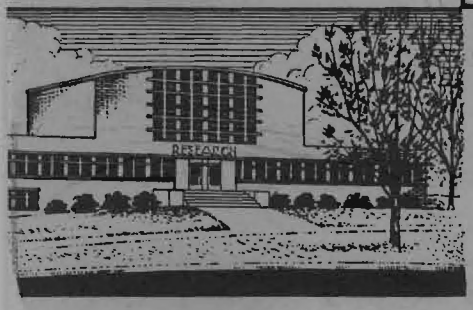
Project D-106

A Frozen Food Plant for the Pavo, Georgia Area
A Feasibility Study

Prepared for
The Georgia Department of Commerce
Scott Candler, Secretary

J. R. Peterson
Project Director



Engineering Experiment Station
Georgia Institute of Technology
Atlanta, Georgia

Project D-106

A Frozen Food Plant for the Pavo, Georgia Area
A Feasibility Study

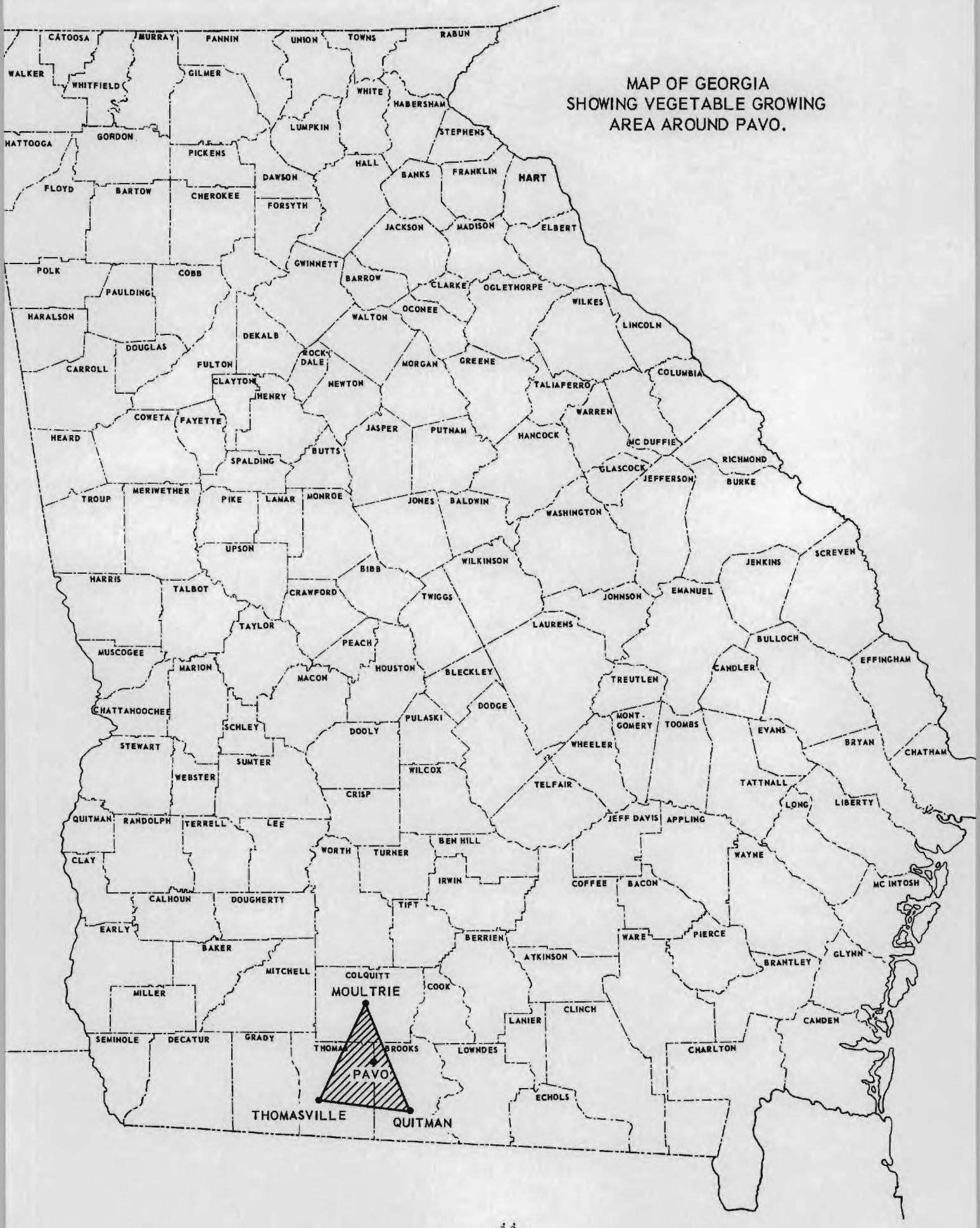
Prepared for
The Georgia Department of Commerce
Scott Candler, Secretary

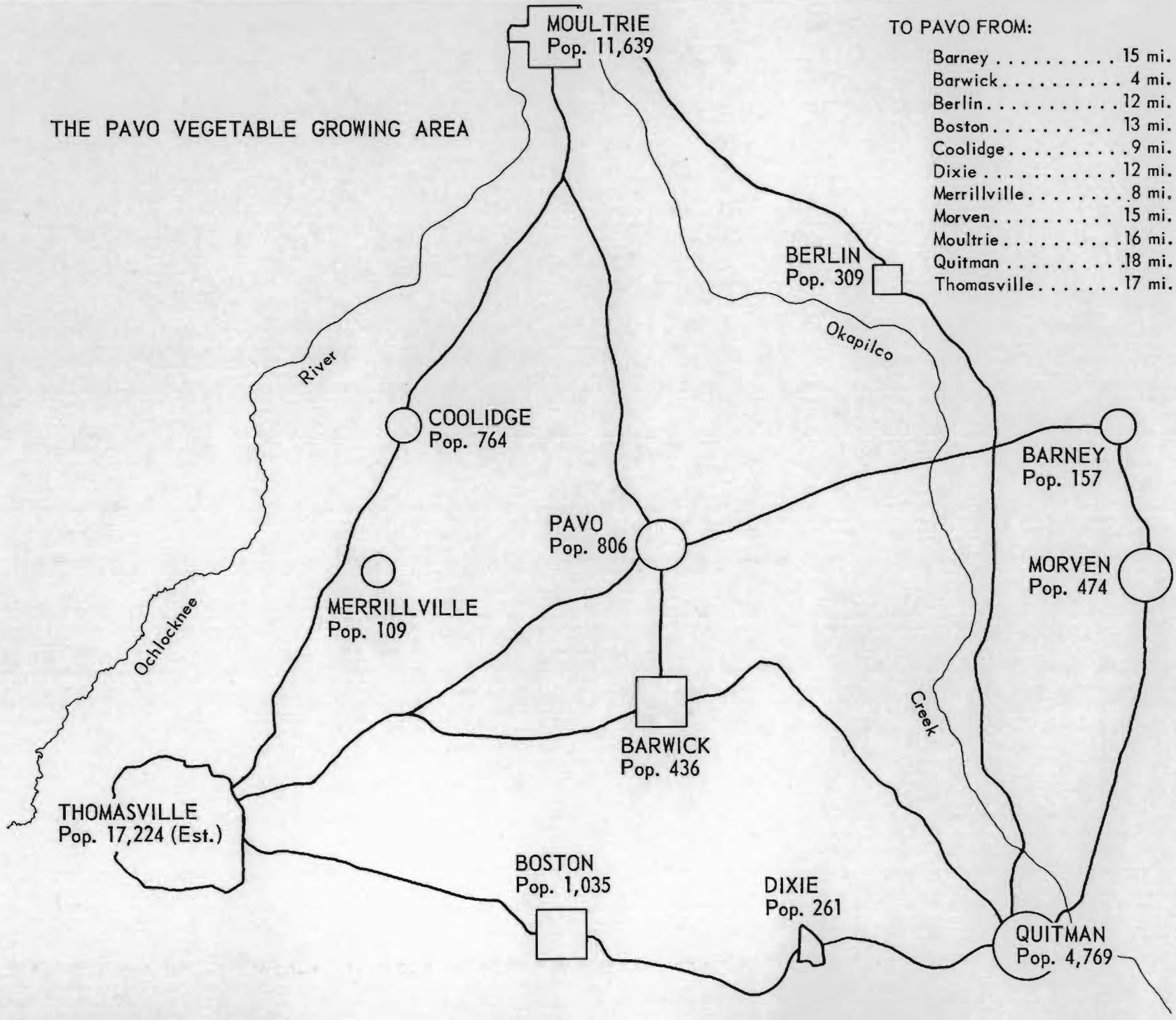
J. R. Peterson
Project Director

Industrial Development Branch
ENGINEERING EXPERIMENT STATION
Georgia Institute of Technology
September, 1957

TABLE OF CONTENTS

	Page
Map of Georgia Showing Vegetable Growing Area around Pavo	ii
Map of the Pavo Vegetable Growing Area	iii
Acknowledgments	iv
Summary	1
Prospects for the Pavo Area	3
Contract Farming	3
Yield, Varieties and Grades	7
Plant Location	9
Labor	10
Climate	11
Markets	13
Prospects for the Frozen Food Industry	15
Institutional Markets	18
Irradiated Foods	20
Frozen Vegetables in the Southeast	22
Frozen Food Economics	22
Quality and Product Acceptance	27
Conclusion	28


MAP OF GEORGIA
SHOWING VEGETABLE GROWING
AREA AROUND PAVO.
CATOOSA
MURRAY
FANNIN
UNION
TOWNS
RABUN
WALKER
WHITFIELD
GILMER
WHITE
HABERSHAM
LUMPKIN
STEPHENS
HATTOOGA
GORDON
PICKENS
HALL
BANKS
FRANKLIN
HART
FLOYD
BARTOW
CHEROKEE
DAWSON
FORSYTH
JACKSON
MADISON
ELBERT
POLK
COBB
GWINNETT
BARROW
CLARKE
OGLETHORPE
PAULDING
OCONEE
WILKES
HARALSON
WALTON
LINCOLN
DEKALB
DOUGLAS
ROCK-
DALE
MORGAN
GREENE
CARROLL
FULTON
COLUMBIA
CLAYTON
NEWTON
TALIAFERRO
HENRY
WARREN
COWETA
FAYETTE
JASPER
PUTNAM
HANCOCK
HEARD
MC DUFFIE
BUTTS
RICHMOND
SPALDING
GLASCOCK
JEFFERSON
BURKE
TROUP
MERIWETHER
PIKE
LAMAR
MONROE
JONES
BALDWIN
WASHINGTON
UPSON
JENKINS
SCREVEN
WILKINSON
BIBB
HARRIS
TALBOT
CRAWFORD
TWIGGS
JOHNSON
EMANUEL
TAYLOR
LAURENS
PEACH
BULLOCH
MUSCOGEE
EFFINGHAM
MARION
HOUSTON
CANDLER
MACON
BLECKLEY
TREUTLEN
CHATTAHOOCHEE
DODGE
PULASKI
MONT-
GOMERY
TOOMBS
EVANS
SCHLEY
DOOLY
STEWART
WHEELER
BRYAN
CHATHAM
SUMTER
WILCOX
WEBSTER
TELFAIR
TATTNALL
CRISP
LONG
LIBERTY
QUITMAN
RANDOLPH
TERRELL
LEE
JEFF DAVIS
APPLING
BEN HILL
CLAY
WORTH
TURNER
WAYNE
IRWIN
COFFEE
BACON
MC INTOSH
CALHOUN
DOUGHERTY
TIFT
EARLY
BERRIEN
WARE
PIERCE
BAKER
ATKINSON
BRANTLEY
GLYNN
MITCHELL
COLQUITT
MOULTRIE
COOK
MILLER
CLINCH
LANIER
CAMDEN
SEMINOLE
DECATUR
GRADY
THOMAS
BROOKS
LOWNDES
CHARLTON
PAVO
ECHOLS
THOMASVILLE
QUITMAN


THE PAVO VEGETABLE GROWING AREA
MOULTRIE
Pop. 11,639
TO PAVO FROM:
Barney . . . . . 15 mi.
Barwick . . . . . 4 mi.
Berlin . . . . . 12 mi.
Boston . . . . . 13 mi.
Coolidge . . . . . 9 mi.
Dixie . . . . . 12 mi.
Merrillville . . . . . 8 mi.
Morven . . . . . 15 mi.
Moultrie . . . . . 16 mi.
Quitman . . . . . 18 mi.
Thomasville . . . . . 17 mi.
BERLIN
Pop. 309
Okapilco
River
COOLIDGE
Pop. 764
BARNEY
Pop. 157
PAVO
Pop. 806
MORVEN
Pop. 474
MERRILLVILLE
Pop. 109
Ochlocknee
Creek
BARWICK
Pop. 436
THOMASVILLE
Pop. 17,224 (Est.)
BOSTON
Pop. 1,035
DIXIE
Pop. 261
QUITMAN
Pop. 4,769

ACKNOWLEDGMENTS

Much of this report is based upon information obtained directly from people in the frozen foods industry and from individuals who have been spending a great deal of time working on some phase of the raising or processing of vegetables. Without their assistance the study could not have been completed.

Grateful acknowledgments are made to Messrs. C. H. Bateman, President, Bateman Frozen Foods Company, Macon, Georgia; Ralph O. Dulany, President, John H. Dulany & Son, Incorporated, Fruitland, Maryland; W. D. Enzie, Manager, Horticultural Research, Birds Eye Division, General Foods Corporation, Albion, New York; W. H. McKenzie, President, Southern Frozen Foods, Incorporated, Montezuma, Georgia, and W. J. Sheffer, Seabrook Farms Company, Seabrook, New Jersey.

Valuable assistance was received from Dr. N. M. Penny and Dr. J. G. Woodroof of the Georgia Experiment Station, Experiment, Georgia; Roy Green of the Department of Agricultural Economics, University of Georgia in Athens, and County Agents W. L. Whittle of Thomasville and Rice Campbell, Jeff Daniel and Robert Willis, all of Moultrie.

Last but not least the assistance of Walter U. Scott of Pavo is acknowledged. Without his perseverance, the study would not even have been started.

Dr. Ernst W. Swanson and Dr. Kenneth C. Wagner read the text and offered many valuable suggestions. The preparation of the manuscript was under the supervision of Mrs. Ann Edwards.

SUMMARY

The area within twenty miles of Pavo favors the location of a food freezing plant. (See maps.)

Southern vegetables have been growing phenomenally in popularity and are expected to be among the most popular frozen vegetables in a few years. Pavo, with its 12-month growing season and a climate and soil favorable to the growing of greens, kale, black-eyed peas, okra, squash, and other crops is ideally situated as the center of a growing area for southern vegetables.

In the United States the volume of the freezing business increased 40 per cent between 1953 and 1956 and is expected to increase far beyond the capacity of the present plants. Since the market for southern vegetables has been growing even faster, new plants will be needed. They can be expected to locate where the vegetables are grown.

A national company is not likely to move in immediately, however. This is a period of consolidation in the industry, marked by mergers and by the purchase of smaller firms by the larger ones. The small, independent food freezers are finding it increasingly difficult to survive.

While sales volume has increased every year, there has not been a corresponding increase in profits. The increased volume has instead been accompanied by an increase in the number of packers and, consequently, sharp competition. The result is a form of "profitless prosperity." One company official stated "All available information indicates that every major packer is operating at a loss during this period." This profitless period should end, however, with the completion of the readjustment.

As long as the large companies are digesting their acquisitions and reorganizing them to fit the policies of the parent companies, they are not going to build many new plants. In about two years, however, the industry should be ready to add new operating units. This waiting period will give the people in the Pavo area the time needed to learn and to develop those additional requisites necessary to attract a frozen food plant. Pavo's 12-month growing cycle for the southern vegetables is one of the most important advantages it could have. Work should begin immediately to make the area even more attractive.

A prime requisite is a favorable attitude towards contract farming. A company looking for a site will take into consideration any history of contract farming in the area, and would naturally favor an area that had already done such farming and had shown an inclination to continue it. Contract farming does provide a steady income, but the unit product prices are not high and the specifications can be restrictive. A major readjustment therefore appears essential in the Pavo area.

Plant location requirements limit the number of sites to those with adequate waste disposal facilities, transportation and utilities. One providing electric and natural gas utilities and situated on a river or on a city sewage system would be best. The site should have access to a good highway and preferably be near a railroad. Several sites should be located as soon as possible and, if possible, optioned. There are a number of suitable locations in the area for a plant.

Although there is little if any profit in the business now, a case might be made for a farmers' cooperative venture. Even if profits were negligible the plant could become a dependable market for farm produce. Such a market does not now exist. On the other hand the cooperative would be under two handicaps:

1. it would find it difficult to raise the large amount of funds needed to establish a plant and keep it going until regular collections are made from customers, and
2. a single small plant would find it difficult if not impossible to diversify into a variety of frozen products or obtain a national market for a single group of products.

The problem resolves into choosing between (1) selling frozen food nationally or (2) selling the Pavo area nationally. The latter task should be a great deal easier for the following reasons:

1. the rising demand for southern vegetables will force the national companies to look southward for new locations, when the present readjustment period is over,
2. a national company will not face the same handicaps as a local unknown company, and
3. within two years the Pavo area can have developed an excellent location.

PROSPECTS FOR THE PAVO AREA

The cities of Moultrie, Quitman and Thomasville form a triangle whose center is Pavo. This is an excellent vegetable growing area and could be a year round source of supply for a freezing plant. (See Table I.) The counties represented are three of the four top vegetable producing counties in the State. The vegetables grown in this area are primarily the so-called southern vegetables, one or more of which can be harvested each month of the year. Frosts have little effect on the growing of those leaf vegetables which thrive in the winter months. Therefore, a plant for freezing Georgia vegetables could operate almost the entire year, and would have a strong competitive advantage over plants farther north. Furthermore, as the southern vegetables continue to grow in popularity, plants will be established in the areas in which these vegetables are grown. Consequently, the Pavo area which already has some excellent resources to offer any frozen vegetable company seeking a factory site, should organize now to make itself the best area available.

Contract Farming

A most important requisite for any area is a sound contract farming history. The farmers in this area have not been accustomed to contract farming in the true sense of the word. To them a contract is defined rather loosely to include even verbal agreements to deliver produce to a processor or a shipper. Such loose agreements are entirely different from the written contracts required by food freezers. These contracts usually stipulate variety, price per unit, inclusive dates during which shipment will be accepted, grade and specifications, and frequently a clause about

TABLE I

Harvest Months for Major Vegetables

Thomas County, Ga.

Vegetable	Months per Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Turnips	7	--	--	--	--						--	--	--
Collards	7	--	--	--	--						--	--	--
Mustard	7	--	--	--	--						--	--	--
Kale	5	--	--	--	--								--
English Peas	4	--	--	--	--								
Spinach	5	--	--	--								--	--
Snap Beans	6				--	--	--	--			--	--	
Squash	8				--	--	--	--	--	--	--	--	
Black Eyed Peas	8				--	--	--	--	--	--	--	--	
Cow Peas	7					--	--	--	--	--	--	--	
Lima Beans	7					--	--	--	--	--	--	--	
Ford Hook Beans	6					--	--	--	--		--	--	
Pole Beans	5					--	--	--			--	--	
Okra	7					--	--	--	--	--	--	--	
Sweet Corn	7					--	--	--	--	--	--	--	
Crowder Peas	7					--	--	--	--	--	--	--	
Sweet Potatoes	6						--	--	--	--	--	--	

Source: W. L. Whittle, County Agent
Letter to Walter U. Scott 7-15-57

insect or disease control. These stipulations put the average farmer under some unaccustomed restrictions, and he may prefer to return to his old ways, unhampered by contracts. A large freezing company will not locate in an area without an assured source of supply, however. The mere assurance that the farmers are willing to do contract farming would be insufficient, since each farmer may have a different idea as to what contract farming is.

Opportunities to do contract farming should be sought by interested growers for two reasons: first, to gain familiarity with it and, second, to establish their reputations as dependable growers. There are two vegetable freezing plants in Georgia and one in Plant City, Florida, to whom growers in this three county area might offer some acreage. From the results of such a small scale experiment, growers can decide whether they would want to continue contract farming and supply produce to a freezing plant.

Contract farming has its pitfalls, however. Many farmers want nothing to do with it because in the past they have dealt with unreliable processors. Some canners have refused to accept quantities for which they have contracted. In other cases, there have been misunderstandings. Contracting in Georgia consequently has not been effective.

At times the farmers have been at fault. They have delivered to the processors only the produce they could not sell at a higher price on the fresh market. Such procedure has given Georgia farmers a poor reputation with Georgia freezers. This reputation is hardly deserved, however. Up until now the large majority of farmers have never done any contract farming.

In order to make sure that such procedures are not continued on a large scale in the future, indoctrination in proper procedures will be necessary. Perhaps the county agents from all three counties could participate in a program. Colquitt County with six agents would be a good program center. It will be necessary to explain thoroughly to the farmers just what is involved in contract farming, its advantages and disadvantages, and the legal obligations assumed under contract.

The farmer must decide whether he wants to produce for the contract market. If he does, he will undoubtedly need help in locating a market. The many small farmers in the area and many large producers have little understanding of marketing. The most frequent answer received to queries about contract farming has been, "No one ever asked me to do it."

It is true that any freezing plant would employ a field man to train and advise the nearby farmers, but it would more likely locate where contract farming had already been established. The plant would not wish to spend three or more profitless years training farmers.

But these same training years that would be profitless for the plants would be profitable for the farmers. Therefore, the training should not be deferred until a food freezing firm establishes its program. It should immediately become a local responsibility.

But the training should include learning what not to do as well as what to do. It is often all too easy to contract with irresponsible processors who might not accept the produce or might not pay for it. This mistake has been made frequently in the Pavo area and elsewhere.

For the time being the farmers would do well to attempt to do business with the three plants already mentioned and with other established canning

plants. Aside from the losses to the farmers, dealing with irresponsible or underfinanced processors could in itself give contract farming in Georgia a bad name.

The farmers should approach the reputable concerns, offer to contract, and do some contract farming. If the contracts are of a restrictive type the experience would be even more valuable. Actually, operating under the terms of a contract requiring certain methods of cultivation, disease control, etc., would give the farmers a realistic understanding of the conditions under which they would be producing for a local freezing plant. Since most of the farmers are small operators doing their own harvesting, harvest labor would not be affected if a plant should move into the neighborhood. Therefore, there would be no change in farming conditions if a plant were established in the area.

With a reputation for reliable contract farming, the area will have added one more attraction to those it already has.

Yield, Varieties and Grades

Yields, varieties and grades of produce around Pavo is a subject on which there is little if any concrete information. Since there has been no organization of the growers to furnish specific vegetables to a specific market, each individual farmer has planted what vegetables he pleased. Naturally, tobacco, cotton and peanuts have received the most attention. Vegetables have really come into prominence in Southwest Georgia only since the reduction by crop controls of the acreages of staple crops. But the money is still in the "big three." These crops still get the best land and the most attention. There are farmers who specialize in vegetables, but the

majority plant vegetables as a fill-in for otherwise idle acres. Vegetable acres will be abandoned if tending them interferes with caring for tobacco, because tobacco under the present support program means cash. But vegetables may or may not mean cash. Therefore, per acre yields on vegetables will vary widely according to the land planted, the practices used and whether or not the vegetables are harvested on time or even harvested at all. Nevertheless, farmers who do concentrate on vegetables get good yields, although even in this case there are no adequate data. The Colquitt County market manager and county agents, however, give the following estimates of yields per acre:

Table II

Vegetable	Bushels	Number of Cuttings
Kale	300 to 400	2 or 3
Collards	200	1 or 2
Turnip Greens	300 to 500	3 or 4
Black-eyed Peas	250 to 300	2 crops
Okra	240	16

Although these yields could be increased by setting up standard practices, there is no assurance that the proper approach is an attempt to increase yield. The tendency has all along been to plant varieties that will yield most; perhaps the main need is to plant varieties having the greatest table use. A high yield of number 2 grade and culls is less profitable than a smaller yield of primarily number 1 grade. No definite information is available on market acceptability of the varieties now being grown.

Grading is also problematic. A farmer naturally wants to sell all his produce, but a freezing plant wants the high grades. Apparently there

has been some friction between shippers and processors over the subject of grades, with little attempt by either side to understand the other. Aside from differences in grades resulting from growing, there are also differences resulting from harvest practices. If a farmer does not gather a field of peas before they dry, he might include those peas in a shipment anyway. Dry peas are not suitable for freezing, and the shipment could be refused by the freezer.

Shipping field-run produce can be satisfactory if the practices used and varieties grown result in high grade vegetables, but no such general program is in effect. Grading could be "sold" to the farmer on a dollar basis alone, if the farmer could be persuaded that his merchandise would not be refused on some pretext, merely because the processor does not need the produce. Again, the need is for a trial at contract farming with reliable processors, even though such processors are some distance away.

Plant Location

After this experience, if the growers decide they want to do contract farming for a local plant they should locate plant sites and if possible option them. Doing so might require discarding a great many cherished hopes, founded on insufficient information. For a freezing plant, arrangements must be made to handle considerable waste. A city sewage treatment system or a river of some size would offer the best solution because the effluent from a freezing plant creates a pollution problem. In addition, the site should offer good highway access, natural gas and electricity, and preferably rail transportation. In the area outlined such a site will be found on the rivers or in or near Moultrie or Thomasville. Both the

Okapilco Creek and the Ochlocknee River offer possibilities, but, since the pipeline is some distance away, natural gas might be difficult to obtain on the Ochlocknee River. On the other hand, the line is close to Okapilco Creek for a considerable distance to the north and northeast of Pavo.

Moultrie, only 16 miles from Pavo, has a building near the farmers' market which was designed for a freezing plant. It has city sewage disposal and utilities. Freezing facilities are not installed. Less than one hundred yards away are 3,600 cubic feet of cold storage space for produce and 1,600 cubic feet of space for subzero storage (-20°). In the middle of town is another empty locker plant which could be used for storage, once it is put in operating condition.

Thomasville has all utilities, and they can be extended a short distance beyond the city limits. Thomasville also has a vocational school which trains refrigeration technicians. Finally, one of the largest trucking companies specializing in hauling refrigerated products has its headquarters in Thomasville.

Truck transportation is available from any point in the area. Rail transportation is available from all but a very few small towns and air transportation is available at Moultrie. Undoubtedly, many sites can be located, but some way should be found to assure that these sites will be available at moderate cost for a freezing plant. Options would be best.

Labor

As indicated by the Department of Labor "Labor Market Reports," there is a very large supply of unskilled labor in the area. In addition, since

all the large towns of southeast Georgia are food processing towns, there is adequate experienced labor to man any size freezing plant. As mentioned above, the vocational school at Thomasville gives courses for refrigeration technicians, so technical personnel are available. Whatever part of the area is chosen for the plant site, labor will be plentiful.

Climate

The climate in the area is such that there is a 12-month growing season for vegetables. The season is little affected by frost as long as water is available. The seasons in many cases overlap sufficiently to permit the farmers to take their first produce to the fresh market for a high price and still deliver the contracted quantity to the processor. (See Tables I and III.)

A wide variety of vegetables including the field pea group is grown from May through November, while the leaf vegetables are grown from October through April. An occasional hard freeze will set back the winter crops, but the plants fully recover within ten days. Several vegetables yield two crops a year; squash and black-eyed peas can be harvested for eight months of the year. A number of others will produce for seven months.

There are long, dry spells every few years, but there is an unlimited supply of ground water in the limestone aquifer under the entire coastal plain. Irrigation has been growing more popular every year. The large farmers have their own equipment, while for others equipment may be rented.

Not to be overlooked is the climate as an attraction to people. The short winters and long spring and autumn seasons make the area very attractive

Table III

AVERAGE MONTHLY PRECIPITATION

(In Inches)

Month	Moultrie	Thomasville
January	3.3	3.9
February	3.6	4.5
March	4.5	4.2
April	3.6	3.5
May	2.3	3.6
June	4.5	5.5
July	6.4	6.9
August	6.6	5.8
September	4.5	5.3
October	2.2	2.5
November	2.2	2.2
December	3.0	4.0

WINTER AND SUMMER

Average Temperature

Month	Moultrie	Thomasville
January	55.1	53.4
July	82.0	80.8

AVERAGE DATE KILLING FROSTS

Month	Moultrie	Thomasville
Last in Spring	March 1	March 6
First in Fall	Nov. 24	Nov. 20

for living as well as for growing vegetables. The large number of hunting preserves in Thomas County offers adequate proof of the pulling power of the area's climate.

What is needed to take full advantage of the climate is a certain amount of practice among the farmers in growing specific grades and varieties for a specific market.

Markets

The Pavo area has a good product to sell. But there is not enough local or regional consumption for the fresh vegetables. However it is examined, the problem is one of finding a national market for a local product. The market for Pavo's product is growing steadily, but in order to reach that market the vegetables must first be frozen. Second, and just as important, someone must make the prospective customers aware that the product is available and sell them. Another complication arises in the freezing itself. Freezing of a very limited quantity of vegetables is not economical. The break-even point is reached only in a plant processing a millions of pounds of produce a year. Therefore, if a freezing plant is established, a selling organization must also be established to provide such a market--in effect, a market on a national scale. A new plant would not be in the same position as are two now well-established Georgia plants. They have spent years building markets for their output and are now entrenched to meet current conditions. A locally financed plant, even if it could raise the large amount of money necessary, might still find the marketing of the product beyond its powers. The frozen foods market is still a class market as proved by the sales of $10.30 per person in 1955 nationally and only $5.90

in Georgia. (See Table V.) This sales figure does not mean that each person buys $10.30 worth of frozen food in a year. It means in fact, that very few people buy frozen foods. Therefore, customers must be sought over a wide geographic area.

A Pavo plant would be left with three alternatives:

1. attempt to sell directly to the national market;

2. pack for the chain stores under the chain store label; or

3. sell in the institutional market.

Under present conditions, the first alternative is almost out of the question because of the high costs involved in gaining product acceptance. The second alternative is a possibility, but the chain stores press for such low prices that a new plant would have too many inefficiencies to compete with established companies. (See section on Frozen Food Economics.) The third alternative is the most likely to be successful if connections can be made with an experienced distributor who serves the institutional market. There is a concentrated institutional market in Florida not far away, but it is a market for specialists only. The subject is covered in detail in a later section.

Any one of these alternatives calls for a kind of selling experience and talent not now to be found in the area. For such a project, the man to run the enterprise should be sought even before seeking a plant site.

On the other hand, if the people in the Pavo triangle concentrate on selling their area to national processors (after first making sure that it is in salable condition), they can avoid all the hazards of building their own plant. The resources that are already in the three-county area, combined with those that can be added by the time the national companies are

ready to expand, should be sufficient to attract one of the new plants that will be built.

PROSPECTS FOR THE FROZEN FOOD INDUSTRY

In only one year (1947) since the industry's inception has the volume failed to show an increase over the previous year. In 1956 the volume in pounds was 20 times what it was in 1938. During the last 3 years the increase has been 40 per cent. Table IV shows production figures.

Table IV

OUTPUT OF COMMERCIAL FROZEN FOODS

(In millions of pounds)

Year	Fruits	Vegs.	Poultry	Meats	Seaf'ds	Prepared Meals	Concen-trates	Total
1938	130	73	12	5	48	--	--	268
1939	180	70	15	10	50	--	--	325
1940	225	92	50	14	50	--	--	431
1941	250	150	75	18	75	--	--	568
1942	275	220	70	12	70	--	--	648
1943	210	300	90	14	90	7	--	711
1944	315	285	90	--	90	10	--	790
1945	445	338	100	--	120	25	--	1,028
1946	540	475	125	12	125	40	--	1,317
1947	347	346	130	15	125	5	--	968
1948	377	446	150	20	150	20	--	1,163
1949	360	566	200	50	165	35	140	1,516
1950	475	590	275	75	225	60	300	2,000
1951	420	790	350	85	300	85	440	2,470
1952	420	895	400	125	350	130	550	2,870
1953	542	1,-76	470	170	400	195	678	3,531
1954	523	974	525	200	450	280	783	3,735
1955 1/	660	1,140	575	250	520	400 2/	807	4,352
1956 1/	670	1,420	550	300	560	565 2/	990	5,055

Source: Quick Frozen Foods, January, 1957, p. 248.

1/ Estimated
2/ Does not include fish sticks, breaded shrimp and potato products

The frozen food industry has a practically unlimited future. A steadily growing population creates a naturally expanding market. Per capita income is

rising rapidly. According to the United States Department of Agriculture: "As their incomes have risen, consumers have spent more for food, including that bought in restaurants and other eating places. They spent an average of $419 per person in 1956, compared with $336 in 1950. This increase resulted partly from consumers buying more food but also from their buying more expensive food and more marketing services.

"Consumers spent 25 per cent of their disposable income for food in 1956 but food of the same type and quantity per person as they bought in 1935-39 would have taken only 16 per cent of their income."1/

The extra nine per cent of disposable income that was spent in 1956 went for more expensive food, marketing services, and more restaurant eating. This tendency represents a continuing trend, and more expensive foods mean in part "convenience foods." Frozen foods are the most outstanding of "convenience foods." As incomes rise, people buy foods easier to prepare. As a larger proportion of women enter the labor force, the "convenience foods" become more of a necessity and less of a luxury, because women then have little time to spend in making preparations for cooking. More expensive foods mean out of season foods made possible by freezing.

Moreover, the frozen food industry itself has been attempting to find easier ways to prepare its product. Dutch ovens and high frequency cooking show much promise in making the preparation of frozen foods easier. Frozen foods need not even be thawed when high frequency cooking is employed. The meals are cooked immediately. Easier preparation means more sales.

1/ U. S. Department of Agriculture, Agricultural Marketing Service, The Marketing and Transportation Situation, MTS-125, May 28, 1957.

As people eat more frequently in restaurants, the market for frozen foods increases. Restaurants and other eating places are a fast growing market for frozen foods (see section on Institutional Markets).

But even with all this, the market has scarcely been touched. Today, just about anything from the components to the fully prepared meal can be obtained from the grocer's frozen food cabinets. Nevertheless, although the per capita expenditures for all food in 1955 in the United States were $405,[1/] expenditures for frozen food were only $10.30 per person.[2/] A large proportion of the population does not as yet use frozen foods and many people so far think of them only as a supplement, a type of emergency ration. Much of this situation is no doubt due to the lack of storage space in old style refrigerators. As these refrigerators are gradually replaced, there will be a tendency to use increasingly the space provided for frozen food and this change will no doubt introduce many people to the regular use of this form of food.

An additional stimulus to consumption can come from intelligent publicizing of the Wisconsin Alumni Research Foundation's findings that frozen foods are in almost every way far more nutritious than canned foods.[3/]

Table V shows that only Florida, among all the southeastern states, is buying more frozen foods than the national average. In 1955 Georgia's per capita purchases averaged only 60 per cent of the national average, but

---

1/ Ibid, p. 16.

2/ Quick Frozen Foods, October, 1956 and the 1950 U. S. Bureau of the Census, Census of Population.

3/ Report of Wisconsin Alumni Research Foundation: Food and Agricultural Chemistry, May, 1956.

per capita income was 72 per cent of the national average. Moreover Georgia's per capita income is rising faster than that of the nation as a whole.[1/] Hence, the Georgia frozen food market has barely been scratched.

Table V

FROZEN FOOD SALES 1955

State	Sales	Per Capita Sales
Georgia	$ 21,113,000	5.90
Florida	48,813,000	13.95
Alabama	14,917,000	4.80
North Carolina	17,763,000	4.15
South Carolina	9,846,000	4.30
Tennessee	18,822,000	5.55
United States	1,700,000,000	10.30

Source: Quick Frozen Foods, October, 1956.

On the other hand, Georgia does not have Florida's tourist trade to inflate the institutional market. In that respect Florida has an advantage, but there is no reason not to consider Florida part of Georgia's market. Aggressive food merchandising in the Southeast could work wonders for the farmer in the next few years.

Institutional Markets

Many small and medium-sized packers and many distributors have found their salvation in the institutional markets, selling to restaurants,

1/ John L. Fulmer and Ernst Swanson, Georgia's New Frontiers: Georgia Institute of Technology, 1957.

hotels, plant cafeterias and the like, but such sales reduce the volume going to the retail market. (See section on Frozen Food Economics.) These institutions, which might at first seem to be poor prospects, are actually among the best customers of the frozen foods industry. Selling to them requires, however, that both the salesman and the production man be specialists.

Restaurants have turned to frozen foods mainly because they keep indefinitely and eliminate expensive kitchen help and space. The frozen food should reach the restaurant packed in portions, ready to be heated or cooked and served. Therefore, the supplier must be an expert on portion control and on portion cost. This would be a simple matter were it not for the fact that different restaurants serve varied size portions (at varying prices), varied grade portions, and varied numbers of customers. Therefore, the packer must make different size packages containing different grades of product in different size portions. When it is considered that the majority of restaurants prefer to obtain all their frozen foods from one distributor who must have available all sizes and grades of portions in all kinds of foods, it becomes obvious that the packer must really "know his wares" to sell in the institutional market. On the other hand, institutional selling has an outstanding advantage in that there is no scramble for the display space at the supermarket.

The foremost institutional markets are located in tourist areas. A large portion of Florida can be so considered, while in the rest of the Southeast tourist areas are more scattered. In-plant feeding, that is, factory cafeteria service, is growing and offers a considerable market.

Although this market may not be served primarily by the national brands, it will be served by someone. Since it is expanding and since the retail field has become highly competitive, there is a strong chance that a substantial portion of the national capacity, represented primarily by small and medium specialist packers, will be diverted almost exclusively to institutional packing. It is a field where knowledge and service are more important than price, and it is perfectly suited to the packer who does not insist on packing under his own label.

If more of the smaller packers concentrate on the institutional market a vacuum will be created in the growing retail market. Such a vacuum would likely be filled by the large packers. Such a situation would increase the pressure for the national brands to expand capacity.

Irradiated Foods

While all the foregoing seems to point to an excellent future for the industry, the question of new ways of food preservation which would make freezing obsolete is undergoing investigation. Several methods of preservation are possible, but only straight irradiation and irradiation freeze drying are currently receiving much attention. Since freeze drying would not eliminate freezing, no further comment upon it is necessary. On the other hand, when it is used as a bacteria-killing medium, irradiation eliminates freezing. It involves radiating food by the application of either radioactive sources such as cobalt 60, or of some type of particle accelerator. If sufficient radiation is received by the food, the bacteria are killed.

A good deal of research has gone into the method in both the United States and Europe. Although considerable success has been attained in arresting food spoilage by irradiating the food, the radiation required to kill the bacteria also seriously impairs the food value and the flavor. When the radiation is reduced to the point where flavor and food value are retained, spoilage is not stopped. Some progress has been made in the use of irradiation as a substitute for blanching (scalding) prior to the freezing of the vegetables, however. Since blanching has a slightly deleterious effect on certain vegetables, many of the frozen food packers are interested in the possibility of replacing the blanching operation.

So far there is no reason to feel that irradiation will replace freezing in the foreseeable future. There would be definite advantages to the process if it could be perfected, since most storage and transportation problems would be eliminated. Irradiated food keeps for long periods without refrigeration. Furthermore, mishandling by the retailer, the biggest problem of the frozen food industry, would be eliminated. All the care exerted to protect the frozen food up to the time it arrives at the retailer's store is useless if the food is allowed to thaw before it goes into the display case. Unfortunately, this happens often and the housewife is just as likely as not to blame the packer for the poor product that results from thawing and refreezing.

Since faster progress is being made toward the replacement of blanching with irradiation than toward replacement of freezing itself, it seems probable that the freezing people themselves will make first use of the process. If satisfactory preservation is ever accomplished by that method, the food freezing industry will be in the best position to exploit it.

Frozen Vegetables in the Southeast

Although frozen vegetables are and have been the backbone of the frozen foods market the industry as a whole is expanding faster than is the vegetable line. The consumption of such new products as prepared meals and juice concentrates is at present expanding more rapidly than is the consumption of vegetables. Nevertheless, between 1953 and 1956 frozen vegetable production increased 32 per cent, while inventories increased only moderately. The production increases are being balanced by sales increases of approximately 10 per cent per year. A substantial portion of this increase has stemmed from the growing national popularity of the southern vegetables (collards, greens, kale, black-eyed peas, okra, etc.). Predominately sectional in character a few years ago, they have been introduced to all parts of the country by migrating Southerners, have achieved national acceptance, and are now growing in popularity faster than frozen foods as a whole. The source of supply for these vegetables is the Southeast and although they have not yet achieved the status of best sellers, it is confidently predicted that they will do so.[1/] As they gain in popularity, they will have to be processed in increasingly large quantities. Additional facilities near the source of supply will then be required.

Frozen Food Economics

But despite great expansion, all is not going smoothly in the business. While the sales volume is constantly growing, there are also constantly increasing numbers of processors getting into the business. The trade journals

---

1/ Quick Frozen Foods, April, 1957, p. 130.

refer to this period as "profitless prosperity." The small profits in the industry result from its rather complex structure, in which nationally advertised brands, unadvertised brands, distributors' brands and chain store brands all compete for a limited area of expensive freezer display space in the retail store. There are 1,700 food freezing firms in the country, a large fraction of them packing under their own labels. There is room in the display cabinets for only a limited number of brands. Therefore, although there is a market for all the frozen food that is being produced, there is not a market for all the brands. Since only half a dozen items account for most of the frozen food profits in most stores, the owners are naturally reluctant to add display cases, especially since the result would be to show more brands without necessarily increasing sales. The consequence is sharp price competition and small margins of profit. Rebates and free merchandise are commonly given to secure places in the display cases.

An official in one of the large freezing companies says, "All available information indicates that every major packer is operating at a loss." The retailer controls the ultimate sales of the frozen products, and where frozen foods are concerned, the retailer is, to a great extent, the chain supermarket. The large volume retailer decides on the volume of the low temperature cabinet space in each store. He decides what brands will go into that space and what proportion of the space will go to each brand product. Often he determines the price, either by forcing the packer to cut quality to fit price or by playing one packer or distributor against the other in a price war for the valuable display space. Frozen foods cannot be stacked like canned displays but must remain at zero temperature, and the

only place they can stay is in a refrigerator.

Unfortunately, this energetic competition among the retail chains is forcing them to buy at the lowest possible prices. The chains also establish the mark-up. It may be much smaller than the packer intended, especially if the product is being used as a price leader. Prices sometimes vary as much as ten cents for a ten-ounce package. Such a variation confuses the housewife and can easily make her doubt the value of the product and the dependability of the retailers.

Although the chain stores may be responsible for a good deal of the problem, they have also introduced an element which could very well resolve much of the confusion. This element is the chain brand in the frozen food industry. The chain brand trend has resulted in a depressed packing price with the chains offering assured outlets in return for low prices. At the same time, since the chains know in advance their exact costs, it has meant a stabilized retail price. Many chains now give more cabinet space to their own brands than to any others; not infrequently they take half the space. What the final result will be is difficult to predict. But since the housewife has shown little brand loyalty so far under this price confusion, there is a strong likelihood that national brand advertising might presell the consumer on frozen foods while the chain store brands make the sales in supermarkets. There is also a strong likelihood that soon the market will be split between the national brands and the chain brands. Furthermore, only the national brands will be able to produce efficiently enough to pack under the chain label. If such an event should occur the only small freezing companies that would survive

would be those freezing speciality products and those servicing the institutional market, where service is paramount.

The big national packers pretty well control the United States market. Birds Eye alone is estimated to sell more than 8 per cent of the market, and nine packers account for 25 per cent. They are well entrenched, financially strong, and well able to weather a long period of unsettled conditions. Volume is still rising, and the national companies will soon lack the production capacity needed to meet demands.

There are approximately 1,700 small packers in the United States who share $1,500,000,000 worth of business a year. These small companies are feeling the strain. At present there is much talk of selling out and of mergers among those small and medium-sized packers who have not already sold out. A large proportion of them have high volume and low profits. In addition many probably have lost their zest for the business under conditions which have placed the retailer in complete control. The packer's own label is disappearing and is being replaced more and more with the chain labels. Many a packer surely must feel that he is no longer working for himself.

In spite of the uncertainties, a great need still exists for the output of these small and medium-sized plants. The large companies will need more facilities shortly to meet growing demand. They would have sound reasons for desiring to incorporate these smaller plants into their own organizations. First, a going organization would be acquired immediately with established sources of supply. The usual long wait between the decision to expand and the putting into operation of the added facilities would be eliminated. Plans, building, organizing and correcting are bypassed. Absorbing a going concern

has its own problems, of course. Second, in most cases the larger company would acquire much needed managerial talent. Third, and perhaps most important for the industry as a whole, such acquisitions would tend to reduce the large number of packers and perhaps stabilize the industry. Therefore, it would seem very likely that the big packers would for the next few years attempt to buy plants rather than build them.

The large frozen food packers may be in for some competition for these plants from other packers who are not now freezing but are planning to diversify. Several of the large companies in the food business are presently considering entering the frozen foods line. Hawaiian Pineapple Company, makers of Dole Brand products, has announced that it is looking for an opportunity in the freezing field. Others are investigating the same possibility. Such companies, even more than the big freezers, would be more likely to acquire operating companies than build their own organizations because of their lack of experience in the field. Such a purchase could give a company not only a plant but an organization. There will likely be several such entries into the market within the next two or three years. Many such mergers or purchases would reduce considerably the number of desirable plants that could be bought by the big freezers. The newcomers in the field would probably be more amenable to paying for some of the intangibles such as product acceptance than would the big frozen food processors who would not want to purchase such an asset. If such should prove to be the case the price for plants would tend to rise, and perhaps make plant construction more attractive.

The tendency to merge or sell out, moreover, would add no plant capacity to the country to supply the extra volume that will probably be needed. In

supplying some of the need, it may be that the new acquisitions can be run more efficiently or for longer periods during the year. In the main, however, increased production can come only from increased capacity. New plants will be needed.

It seems almost certain that a period has been reached where companies will tend to increase in size through mergers and purchases. During this period, the building of new plants should decrease. But if demand continues at its present pace, pressure for additional facilities will build up rapidly.

Quality and Product Acceptance

The quality the packer puts into his product has once more become a significant problem. Mishandling at the retail end creates a still further quality problem. These two aspects of the problem together could bring on a break in the market. If such a drop should occur, it would not reach the extent of the 1947 debacle. Women are now accustomed to the product and many refrigerators and freezers are designed for frozen foods. Nevertheless, if the market were to take even a moderate downturn because of a lowering of quality, the smaller unadvertised brand would be the first to lose out, both because the consumer would not take a chance on its quality and because the small packer is not as able as the large packer to stand a financial loss. Such a downturn would reduce the pressure for expansion and also allow the large firms to buy the small firms. The large firms might come out of the shakedown healthier than when they entered the readjustment phase. Furthermore, although southern vegetables have been less subject to price vagaries, at least one of the largest packers believes that a sharp price drop may be

due.[1/] The industry would be unlikely to build a plant to exploit a product in which there may be no profit. Expansion would wait until the price was stabilized.

During the interim a community interested in obtaining a freezing plant could profitably spend its time making itself more attractive to industry.

CONCLUSION

At present there is little if any profit in frozen foods, but a reasonable argument could be presented for a locally financed plant even if the plant made no significant profit. If the local produce organizations and farmers financed a non-profit plant, it would at least furnish a market for their own produce. Such a market is lacking now on any stable basis. However, a locally financed plant would require a great deal of cash to carry it through the first year or two of operation. This approach does not appear to offer the best alternative, therefore.

The best solution would be to induce a national company to build in the area to exploit the agricultural potential. A locally owned plant would be putting all its eggs in one basket; specifically, it would be dependent upon the stability of the market for southern vegetables. That market is booming right now, but a look at the present market for frozen green peas and strawberries will show what can easily happen. These two products were selling at high prices a year ago. Today, because a large part of the last year's record pack is still in storage, they are being offered at very low prices. Although every year has resulted in a larger pack of southern vegetables than has the previous year, the market could break next year.

1/ From a letter to the Industrial Development Branch, Engineering Experiment Station.

A national company, on the other hand, would actually be diversifying its production if it established the plant, since at present most of them are freezing only a portion of their own southern vegetables. They purchase the balance from packers who specialize in that particular product.

In order for a national company to be attracted to the Pavo area, the people themselves should organize to add to the area's natural attractions. The most important thing for such an organization to do, is to attempt to start a trial contract farming program. This program would show the farmers how much income they would receive. It would also teach them what would be required of them in return for an assured market. Finally, the program would prove to the freezing companies that an assured supply of produce is available.

No matter at what site a company locates, from Moultrie to Quitman to Thomasville, the entire territory outlined in that triangle could supply produce and labor. Not only the farmers but the people in the area as a whole would benefit. Any organization of the three-county area, however, would probably have to start with the farmers. County agents and the produce associations could form a good nucleus of a three-county organization to work towards the eventual location of a national company somewhere in the Pavo area. Good sites are to be had in the northern end of the triangle, but a really large plant might find it necessary to forego the proximity of the natural gas line to the river in order to take advantage of the greater rate of flow lower down the river. Gas would therefore cost more but sewage disposal would be facilitated.

The most important point to stress, however, is that any location in the area would benefit all three counties. A cooperative effort by all three could do much to develop and add to the area's resources.

Respectfully submitted:

J. R. Peterson
Project Director

Approved:

Kenneth C. Wagner, Head
Industrial Development Branch

J. E. Boyd, Director
Engineering Experiment Station